Kentucky's
NOx SIP Call Plan

prepared &
submitted by

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January 2002

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Appendices

1.0 Introduction

On October 27, 1998, the United States Environmental Protection Agency (EPA) published a final rule titled, "Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone" [63 FR 57355]. This rule is more commonly referred to as EPA's NOx SIP Call. The rule required Kentucky and certain other states to limit the summertime emission of oxides of nitrogen (NOx) which is one of the precursors of ozone pollution. Several states disagreed with EPA's findings under this rule and appealed EPA's action to appropriate federal courts. On March 3, 2000, the U.S. Court of Appeals for the District of Columbia Circuit ruled predominately in favor of EPA's actions and directed the States affected by EPA's NOx SIP Call to submit appropriate revisions to their State Implementation Plans.

The Kentucky Natural Resources and Environmental Protection Cabinet, in order to comply with EPA's NOx SIP Call, hereby submits this revision to Kentucky's State Implementation Plan.

In order to comply with the NOx reduction required by the NOx SIP Call, the Cabinet, in consultation with EPA and public comment, has adopted six regulations, which became effective on August 15, 2001 (*See Appendix A for copies of the regulations or on the internet at* www.lrc.state.ky.us/kar/Title401.htm). The six regulations are as follows:

401 KAR 51:001. Definitions for 401 KAR Chapter 51.
401 KAR 51:160. NOx requirements for large utility and industrial boilers.
401 KAR 51:170. NOx requirements for cement kilns.
401 KAR 51:180. NOx credits for early reduction and emergency.
401 KAR 51:190. Banking and trading NOx allowances.
401 KAR 51:195. NOx opt-in provisions.

(Note: 401 KAR 51:200 Regional NOx emission requirements was inadvertently listed and submitted in the October 10, 2001, submittal, and is not part of Kentucky's NOx SIP Call SIP revision. Furthermore, this regulation is to be repealed since its purpose (i.e., the Louisville attainment demonstration) is no longer relevant with the redesignation of the Louisville area to attainment.)

401 KAR 51:160 regulates emissions from units that serve generators with a nameplate capacity equal to or greater than twenty-five (25) megawatts (MWe). These units are commonly referred to as electric generating units or EGUs. In addition, 401 KAR 51:160 regulates emissions from large industrial boilers or turbines which have a maximum design heat input equal to or greater than two hundred fifty (250) MMBTU per hour that are not electric generating units. For purposes of this plan, these units are referred to as Non-EGUs. Finally, 401 KAR 51:170 regulates emissions from cement kilns. It should be noted that EPA has stated its intent to revise its rules to require controls for large stationary internal combustion engines (ICEs). When this occurs, the Cabinet intends to adopt an appropriate regulation to add controls to these sources.

1.1 Kentucky's Projected 2007 Control Period NOx Emissions (Tons)

The combination of 401 KAR 51:160 and 401 KAR 51:170 achieves all the necessary NOx reductions for Kentucky as mandated by EPA's NOx SIP Call. In light of the reductions achieved, the projected 2007 control period NOx emissions for the various categories are as follows:

Total EGU NOx Budget (*Revised with corrections*)	36,504
Total Non-EGU NOx Budget (*Revised with corrections*)	28,750
Total NOx Budget for Stationary Area Sources	31,807
Total NOx Budget for Nonroad Mobile Sources	15,025
Total NOx Budget for Highway Mobile Sources	53,268
Total NOx Budget for Kentucky (*Revised with corrections*)	165,354

The following plan provides details on how Kentucky proposes to meet the requirements of EPA's NOx SIP Call. Additionally, an electronic version of this plan and relevant attachments can be found on the Division for Air Quality's web site at: www.nr.state.ky.us/nrepc/dep/daq/pubinfo/calendar.html.

2.0 Kentucky's NOx Budget

2.1 EGU NOx Budget

Attachment 1 contains the EGU budget for Kentucky. The total EGU budget for Kentucky is thirty-six thousand five hundred four (36,504) tons. The budget for those EGUs in the trading program (controlled sources) is thirty-six thousand forty-five (36,045) tons. The budget for those EGUs not in the trading program (uncontrolled sources) is four hundred fifty-nine (459) tons. These numbers represent Kentucky's revised budget. The Cabinet revised the budget to reflect corrections to EPA's budget. The Cabinet included one (1) EGU that was previously omitted. The EGU budget revisions are contained in Attachment 1 and explanations are provided below.

Total EGU Budget (Revised)	36,504 tons
Total Budget for large EGUs (>=25 MWe) in the trading program	36,045 tons
Total Budget for small EGUs (<25 MWe) not in the trading program	459 tons

2.1.1 Omitted EGU Unit Which Has Been Added to Kentucky's EGU Budget

(*See Appendix B for EGU documentation*)

Western Kentucky Energy (Reid Combustion Turbine) - 21-233-00001, Point RT)
This source was omitted from EPA's EGU NOx SIP call budget and is now being included. This source was in operation in 1995 as indicated by the company's February 1999 NOx SIP Call comments.

2.2 Non-EGU NOx Budget

Attachment 2 contains the Non-EGU budget for Kentucky. The total Non-EGU budget for Kentucky is twenty-eight thousand seven hundred fifty (28,750) tons. This budget consists of the following categories: large Non-EGUs in the trading program, small Non-EGUs not in the trading program, large cement kilns, and large internal combustion engines (ICEs). The budget for large Non-EGUs in the trading program (controlled sources) is one hundred seventy-nine (179) tons. The budget for small Non-EGUs not in the trading program (uncontrolled sources) is twenty-four thousand three hundred ninety-seven (24,397) tons. The budget for large cement kilns, which are not part of the trading program, but are controlled at 30% of their uncontrolled levels, is one thousand ninety-one (1,091) tons. The final component of the Non-EGU budget is large internal combustion engines (ICEs) which are not part of the trading program and include three thousand eighty-three (3,083) tons. This budget does not currently reflect any additional controls for these sources. However, it is EPA's intent to regulate ICEs at a later date at which point the Cabinet plans to promulgate regulations for these sources. These numbers represent Kentucky's revised Non-EGU budget. The Cabinet revised the budget to reflect corrections to EPA's budget. Explanations for these changes are provided below (*See Attachment 2*).

Total Non-EGU Budget (Revised)	28,750 tons
Total budget for large Non-EGUs in the trading program	179 tons
Total budget for small Non-EGUs not in the trading program	24,397 tons
Total budget for large cement kilns	1,091 tons
Total budget for large ICEs	3,083 tons

2.2.1 Large Non-EGU Units Which Were Misidentified As Small

(*See Appendix B for Non-EGU documentation*)

Marathon Ashland Petroleum - 21-019-0004, Point 064, Segment 02 & 03, and Point 08C Segment 03

The company has indicated that the capacity for Point 064 boiler is 325 MMBTU/hr, and for Point 08C's two (2) boilers is 367 MMBTU/hr each. Therefore they have been properly identified as large Non-EGUs in Kentucky's Non-EGU Budget. The Cabinet indicated this unit's status in its February 1999 NOx SIP Call comments to EPA.

2.2.2 Small Non-EGU Units Which Were Misidentified As Large Non-EGUs

(*See Appendix B for Non-EGU documentation*)

Westvaco Corp - 21-007-0002, Point 009

The company has indicated that this is a primary wood (bark) boiler with less than fifty percent (50%) annual heat input for a fossil fuel and therefore is not subject to controls.

Dow Corning Corp – 21-041-0004, Point 0AA

The 1995 and current listed (rated) boiler capacity for this boiler at point 0AA is 97 MMBTU/hr. The listed (rated) boiler capacity means the nameplate boiler capacity. No electric generator is associated with this Dow Corning boiler at point 0AA.

Daramic Inc. (formerly W. R. Grace & Co.) - 21-059-0006, Point 004

The 1995 data submitted to EPA indicated a boiler capacity of 259 MMBTU/hr for point 004. However, this boiler capacity, which represented three separate boilers at point 004, should have indicated a combined capacity of 112 MMBTU/hr. The boiler capacities for the three boilers at point 004 was in 1995 and is currently 22.3 MMBTU/hr, 26.8 MMBTU/hr, and 63.0 MMBTU/hr. The listed (rated) boiler capacity means the nameplate capacity. None of the three boilers at point 004 have ever been attached to an electric generator.

USAARMC & Fort Knox – 21-093-0022, Point 013

The 1995 data submitted to EPA indicated a boiler capacity of 700 MMBTU/hr for point 013. However, this boiler capacity represented 175 separate boilers at point 013 each with a capacity of 4 MMBTU/hr. In addition, attached is a March 27, 2000, letter from Fort Knox officials that confirms the past and current boiler status at point 13. The listed (rated) capacity means the nameplate capacity. None of the 175 boilers at point 013 have ever been attached to an electric generator. Finally, in an April 25, 2000, phone conversation with Kevin Culligan, EPA's Clean Air Markets Division, EPA indicated to Division staff that no additional information was

necessary from the Kentucky Division for Air Quality to further indicate that Fort Knox should not be identified as being subject to the 126 petitions.

Air Products & Chemicals - 21-157-0009, Points 0AA & 0AB
Information provided by the company indicate that the boiler at emission point 0AA is rated at 215 MMBTU/hr, and the boiler at emission point 0AB is rated for 246 MMBTU/hr., less than the 250 MMBTU/hr criteria.

Ichikoh Manufacturing – 21-211-0034, Points – 003, 004, and 005
This sources boiler capacity at points 003, 004 and 005 were incorrectly listed (rated) as 1000 in the Division's 1995 KYEIS database. The listed (rated) boiler capacities for points 003, 004, and 005 were actually less than 10 MMBTU/hr. for each boiler present. The listed (rated) boiler capacity means the nameplate capacity. The boilers in place in 1995 were not attached to an electric generator. As indicated in a April 25, 2000, phone conversation with Kevin Culligan, EPA Clean Air Markets Division, the boilers at points 003, 004, and 005 are no longer in operation and are not reflected in the source's Title V Operating permit that is attached. Currently, the source has no boilers and has paint spray booths and surface coating operations in their place at points 003, 004, and 005.

Toyota Motor MFG USA – 21-209-0030, Point 0AA
The 1995 data submitted to EPA indicated a boiler capacity of 297 MMBTU/hr. However, this capacity represented six separate boilers at point, 0AA none of which were over 99 MMBTU/hr. Specifically, the point has five boilers listed (rated) at 99 MMBTU/hr and 1 boiler listed (rated) at 50 MMBTU/hr. The listed (rated) boiler capacity means the nameplate capacity. The correct total boiler capacity for the six boilers at point 0AA is 545 MMBTU/hr. None of the six boilers at point 0AA have ever been attached to an electric generator.

Texas Gas Trans Corp (Slaughters Compressor) - 21-233-0074, Point 002
Division calculations indicate that the heat input for the industrial turbine at point 002 at Texas Gas is not a large Non-EGU. The heat input for the turbine at point 002 is less than 10 MMBTU/hr.

2.2.3 Large Stationary Internal Combustion Engines (ICE)

In accordance with the lower court ruling of March 3, 2000, the Cabinet has removed the control for the ICE units and recalculated the Non-EGU budget absent controls for these sources. In addition, the Cabinet reserves the right to make changes to the budget for this category in the event that the actual emissions are larger than those estimated by EPA.

2.3 Budget for Stationary Area Sources*

No controls have been applied to these sources. Therefore, the budget is unchanged from that provided by EPA (31,807 tons). It should be noted, however, that the Cabinet reserves the right to make changes to the budget for this category in the event that the actual emissions are larger than those estimated by EPA.

2.4 Budget for Nonroad Mobile Sources*

No controls have been applied to these sources. Therefore, the budget is unchanged from that provided by EPA (15,025 tons). It should be noted, however, that the Cabinet reserves the right to make changes to the budget for this category in the event that the actual emissions are larger than those estimated by EPA.

2.5 Budget for Highway Mobile Sources*

No controls have been applied to these sources. Therefore, the budget is unchanged from that provided by EPA (53,268 tons). It should be noted, however, that the Cabinet reserves the right to make changes to the budget for this category in the event that the actual emissions are larger than those estimated by EPA.

*Hard copies of the Stationary Area, Nonroad Mobile, and Highway Mobile budgets have not been included due to the fact that no changes were made to these budgets. Additionally, an electronic version of Kentucky's NOx SIP Call Plan and relevant attachments can be found on the Division for Air Quality's web site at:

www.nr.state.ky.us/nrepc/dep/daq/pubinfo/calendar.html.

3.0 Initial NOx Allocations for Kentucky's EGUs and Non-EGUs (2004-2006)

The initial NOx allocations for EGUs and Non-EGUs are provided in Attachment 3 and Attachment 4 respectively (*Go to www.nr.state.ky.us/nrepc/dep/daq/pubinfo/calendar.html for an electronic copy of Attachments 3 and 4*). An explanation of how the Cabinet determined these allocations for each of these categories is provided below.

In addition, to the initial allocation, eligible sources may also request NOx credits from Kentucky's compliance supplement pool in accordance with the criteria set forth in 401 KAR 51:180, NOx credits for early reduction and emergency. Kentucky's compliance supplement pool has credits equal to thirteen thousand five hundred twenty (13,520) tons of NOx.

3.1 EGU NOx Allocations

Kentucky EGU NOx allocations were determined in accordance with 401 KAR 51:160, NOx requirements for large utility and industrial boilers. Specifically, Section 4 of this regulation provides the methodology for the allocation of NOx allowances to EGUs. Section 4 (2)(a) divides the total number of NOx allowances allocated by the Cabinet into separate pools for existing and new units. For the initial 2004-2006 allocation period ninety-five (95) percent of the total NOx allowances will be allocated to existing units and five (5) percent will be allocated to new units. For each allocation period beginning with 2007-2009, ninety-eight (98) percent of the total NOx allowances will be allocated to existing units and two (2) percent will be allocated to new units.

3.1.1 EGU NOx Allocations for Existing Units

Initial NOx allocations for existing EGUs were determined in accordance with 401 KAR 51:160 as follows:

1. Based on the average of the two highest amounts of the unit's heat input from the three most recent control periods (i.e., 1998, 1999, and 2000 for the 2004-2006 allocation period). In cases where no acid rain heat input data was available for an existing unit, the Cabinet utilized the best available data. Additionally, in situations where existing units have only one recent year of heat input data available because they recently commenced commercial operation no averaging of heat input information was performed.

2. The average of the two highest heat inputs was multiplied by the .15 lb/MMBTU or the permit limit, whichever is less.

3. Since the initial total EGU NOx allowances did not equal ninety-five (95) percent, for the 2004-2006 allocation period, of the total number of tons of NOx allowances (i.e., emissions) in Kentucky's EGU trading program, the Cabinet was required to adjust the number of allowances to equal ninety-five (95) percent of the trading budget.

4. This adjustment was made by multiplying each unit's allocation by the result of ninety-five (95) percent, for the 2004-2006 allocation period, of the total EGU trading budget divided by the total number of initial EGU allowances. If this adjustment is necessary for subsequent allocation periods for existing EGUs then ninety-eight (98) percent will be applied for the adjustment.

The total budget for EGUs is thirty-six thousand five hundred four (36,504) tons. The total budget for EGUs in the trading program is thirty-six thousand forty-five (36,045) tons. Five (5) percent of the EGU trading program budget has been reserved for new source growth (set-asides). The new source set-asides number amounts to one thousand eight hundred three (1,803) tons. The remaining ninety-five (95) percent of the EGU trading program budget, thirty-four thousand two hundred forty-two (34,242) tons, has been divided among the existing EGUs (*See Attachment 3 regarding the EGU NOx Allocations*).

Total budget for EGUs (Revised)	36,504 tons
Budget for EGUs in trading program	36,045 tons
EGU Set-asides for new source growth	1,803 tons
Total budget for EGUs in trading program (minus set-aside)	34,242 tons

3.1.2 EGU NOx Allocations for New Units

Allocation requests from qualifying new EGUs from the five (5) percent set-aside pool in 2004, 2005, 2006, or two (2) percent thereafter, will be addressed in accordance with 401 KAR 51:160 as follows:

1. Allocation requests for more than the current annual control period beginning in 2004 shall be limited to the years in the current allocation period. Therefore, an allocation request cannot cross over allocation periods. As appropriate, an additional request for allocations can be made to the Cabinet for additional control periods included in the next allocation period.

2. Within sixty (60) days of receipt of a NOx allowance allocation request, the Cabinet must take appropriate action and shall notify the U.S. EPA and the NOx budget units of the number of NOx allowances allocated for the control period to the NOx budget unit. Therefore, the Cabinet will begin accepting requests for new set-aside allowances only beginning February 1, 2004, and February 1 of each year thereafter.

3. Any allocation request submitted to the Cabinet shall be considered "received" at the close of business on each workday.

4. Allocations shall be made to all requests as long as there are enough NOx allowances in the set-aside pool to satisfy the requests.

5. Should the number of allocations in the set-aside pool be less than the number of requests received at the close of business on a workday, each EGU will receive a pro-rated allowance based on the following formula:

[(Number of allocations requested by each EGU on that workday) / (Total number of EGU allocations requested on that workday)] x Number of allocations left in the EGU set-aside pool.

6. Once an allocation set-aside pool for a control period has been depleted of all NOx allowances, the Cabinet shall deny, and shall not allocate any NOx allowances pursuant to a NOx allowance allocation request under which NOx allowances have not already been allocated for the control period.

3.2 Non-EGU NOx Allocations

Kentucky Non-EGU NOx allocations were determined in accordance with 401 KAR 51:160, NOx requirements for large utility and industrial boilers. Specifically, Section 4 of this regulation provides the methodology for the allocation of NOx allowances to Non-EGUs. Section 4 (2)(b) divides the total number of NOx allowances allocated by the Cabinet into separate pools for existing and new units. For each allocation period ninety-eight (98) percent of the total NOx allowances will be allocated to existing units and two (2) percent will be allocated to new units.

3.2.1 Non-EGU NOx Allocations for Existing Units

Initial NOx allocations for existing Non-EGUs were determined in accordance with 401 KAR 51:160 as follows:

1. Based on the average of the two highest amounts of the unit's heat input from the three most recent control periods (i.e., 1998, 1999, and 2000 for the 2004-2006 allocation period). In cases where no acid rain heat input data was available for an existing unit, the Cabinet utilized the best available data. Additionally, in situations where existing units have only one recent year of heat input data available because they recently commenced commercial operation no averaging of heat input information was performed.

2. The average of the two highest heat inputs was multiplied by the .17 lb/MMBTU or the permit limit, whichever is less.

3. Since the initial total Non-EGU NOx allowances did not equal ninety-eight (98) percent, for the 2004-2006 allocation period, of the total number of tons of NOx allowances (i.e., emissions) in Kentucky's Non-EGU trading program, the Cabinet was required to adjust the number of allowances to equal ninety-eight (98) percent of the trading budget.

4. This adjustment was made by multiplying each unit's allocation by the result of ninety-eight (98) percent, for the 2004-2006 allocation period, of the total Non-EGU trading budget divided by the total number of initial Non-EGU allowances. If this adjustment is necessary for subsequent allocation periods for existing Non-EGUs then ninety-eight (98) percent will continue to be applied for the adjustment.

The total budget for Non-EGUs is twenty-eight thousand seven hundred fifty (28,750) tons. The total budget for Non-EGUs in the trading program is one hundred seventy-nine (179) tons. Two (2) percent of the Non-EGU trading program budget has been reserved for new source growth (set-asides). The new source set-asides number amounts to four (4) tons. The remaining ninety-eight (98) percent of the Non-EGU trading program budget, one hundred seventy-five (175) tons, has been divided among the existing Non-EGUs (*See Attachment 4 regarding the Non-EGU NOx Allocations*).

Total budget for Non-EGUs (Revised)	28,750 tons
Budget for Non-EGUs in the trading program	179 tons
Non-EGU Set-asides for new source growth	4 tons
Total budget for Non-EGUs in the trading program (minus set-aside)	175 tons

3.2.2 Non-EGU NOx Allocations for New Units

Allocation requests from qualifying new Non-EGUs from the two (2) percent set-aside pool will be addressed in accordance with 401 KAR 51:160 as follows:

1. Allocation requests for more than the current annual control period beginning in 2004 shall be limited to the years in the current allocation period. Therefore, an allocation request cannot cross over allocation periods. As appropriate, an additional request for allocations can be made to the Cabinet for additional control periods included in the next allocation period.

2. Within sixty (60) days of receipt of a NOx allowance allocation request, the Cabinet must take appropriate action and shall notify the U.S. EPA and the NOx budget units of the number of NOx allowances allocated for the control period to the NOx budget unit. Therefore, the Cabinet will begin accepting requests for new set-aside allowances only beginning February 1, 2004, and February 1 of each year thereafter.

3. Any allocation request submitted to the Cabinet shall be considered "received" at the close of business on each workday.

4. Allocations shall be made to all requests as long as there are enough NOx allowances in the set-aside pool to satisfy the requests.

5. Should the number of allocations in the set-aside pool be less than the number of requests received at the close of business on a workday, each Non-EGU will receive a pro-rated allowance based on the following formula:

   [(Number of allocations requested by each Non-EGU on that workday) / (Total number of Non-EGU allocations requested on that workday)] x Number of allocations left in the Non-EGU set-aside pool.

6. Once an allocation set-aside pool for a control period has been depleted of all NOx allowances, the Cabinet shall deny, and shall not allocate any NOx allowances pursuant to a NOx allowance allocation request under which NOx allowances have not already been allocated for the control period.

4.0 Kentucky's Legal Authority

Kentucky's statutory authority for promulgation of the Division for Air Quality's regulations pertaining to the NOx SIP Call is as follows:

4.1 Legal Authority

KRS 224.10-100, 224.20-100, 224.20-110, 224-20-120,
40 CFR 51.121 as amended at 65 FR 11222 (March 2, 2000), 51.122, 72.2, 75.1, 75.2, 75.4, 75.11 to 75.13, 75.17, 75.19, 75.20, 75.24, 75.70, 75.72, 75.74, 75.75, Part 96, and
42 USC 7410.

4.2 Kentucky's NOx SIP Call Regulations

401 KAR 51:001. Definitions for 401 KAR Chapter 51.
401 KAR 51:160. NOx requirements for large utility and industrial boilers.
401 KAR 51:170. NOx requirements for cement kilns.
401 KAR 51:180. NOx credits for early reduction and emergency.
401 KAR 51:190. Banking and trading NOx allowances.
401 KAR 51:195. NOx opt-in provisions.

(Note: 401 KAR 51:200 Regional NOx emission requirements was inadvertently listed and submitted in the October 10, 2001, submittal, and is not part of Kentucky's NOx SIP Call SIP revision. Furthermore, this regulation is to be repealed since its purpose (i.e., the Louisville attainment demonstration) is no longer relevant with the redesignation of the Louisville area to attainment.)

For copies of Kentucky's NOx SIP Call regulations please see Appendix A or on the internet at www.lrc.state.ky.us/Title401.htm.

5.0 Public Participation

A public hearing to receive comments regarding Kentucky's NOx budget demonstration and initial source allocations concerning EPA's NOx SIP Call was conducted on November 19, 2001. Documentation regarding the public notice and responses to comments received during the public comment period is included in Appendix C and on the Division for Air Quality's web site listed below.

www.nr.state.ky.us/nrepc/dep/daq/pubinfo/calendar.html